

WHAT IS CLAIMED IS:

1. An anti-angiogenic peptide substantially identical to about 10 to about 150 consecutive amino acids selected from the N-terminal end of human placental lactogen, human growth hormone, or growth hormone variant hGH-V, wherein the peptide

5 (i) inhibits capillary endothelial cell proliferation and organization;  
(ii) inhibits angiogenesis in chick chorioallantoic membrane; and  
(iii) binds to at least one specific receptor which does not bind an intact full length growth hormone, placental lactogen, or growth hormone variant hGH-V.

10 2. The peptide of claim 1, wherein the peptide is generated by enzymatic cleavage of growth hormone, placental lactogen, or growth hormone variant hGH-V.

3. The peptide of claim 1 having the amino acid sequence of SEQ ID NO:18.

15 4. The peptide of claim 1 having the amino acid sequence of SEQ ID NO:24.

5. The peptide of claim 1 having the amino acid sequence of SEQ ID NO: 30.

6. An isolated nucleic acid encoding the peptide of claim 1.

20 7. The nucleic acid of claim 6, wherein the nucleic acid is DNA.

8. The nucleic acid of claim 6, wherein the nucleic acid is RNA.

25 9. The nucleic acid of claim 7, wherein the nucleic acid comprises a cDNA sequence.

10. The nucleic acid of claim 7, wherein the nucleic acid comprises the sequence of SEQ ID NO:14.

30 11. The nucleic acid of claim 7, wherein the nucleic acid comprises the sequence of SEQ ID NO:20.

12. The nucleic acid of claim 7, wherein the nucleic acid comprises the sequence of SEQ ID NO:26.

13. The nucleic acid of claim 7, wherein the nucleic acid comprises the sequence of SEQ ID NO:19.

14. The nucleic acid of claim 7, wherein the nucleic acid comprises the sequence of SEQ ID NO:13.

10 15. The nucleic acid of claim 7, wherein the nucleic acid comprises the sequence of SEQ ID NO:25.

16. The nucleic acid sequence of claim 6, wherein the nucleic acid sequence comprises a vector.

15 17. The nucleic acid sequence of claim 16, wherein the vector is an expression vector.

18. A host cell comprising the nucleic acid of claim 7.

20 19. A method of producing the peptide of claim 1, comprising expressing the nucleic acid in the host cell of claim 18, and recovering the peptide.

20. The method of claim 19, wherein a peptide product of the expressed nucleic acid is recovered from the host cell and is enzymatically cleaved to generate the peptide of claim 1.

25 21. A method of treating an angiogenic disease in a subject, the method comprising administering to a subject in need of such treatment an angiogenesis inhibitory effective amount of a peptide of claim 1.

30 22. The method of claim 21 wherein the peptide has the amino acid sequence of SEQ ID NO:18, SEQ ID NO:24 or SEQ ID NO:30.

23. A method of inhibiting tumor formation or growth in a patient, the method comprising administering to the patient an angiogenesis inhibitory effective amount of the peptide of claim 1.

5 24. The method of claim 23 wherein the peptide has amino acid sequence SEQ ID NO:18, SEQ ID NO:24 or SEQ ID NO:30.

10 25. A method for diagnosing a probable abnormality of placental vascularization during pregnancy comprising assaying a level of at least one of endogenous N-terminal fragments of growth hormone, prolactin, growth hormone variant hGH-V, and placental lactogen in a tissue sample from a patient; and

15 comparing the level of the at least one of endogenous N-terminal fragments to an average level of the at least one of endogenous N-terminal fragments in a normal patient population;

wherein a level of the at least one of endogenous N-terminal fragments higher than the average level is a probable abnormality of placental vascularization during pregnancy.

26. A method of modulating vascularization of a patient's placenta, the method comprising administering to the patient an angiogenesis inhibitory effective amount of the peptide of claim 1.